IDAHO
DEPARTMENT OF FISH & GAME

Joseph C. Greenley, Director

FEDERAL AID TO FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-71-R-3

REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

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Period Covered: 1 January 1978 to 31 December 1978 by

Will Reid
Regional Fishery Manager

March, 1979

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JOB PERFORMANCE REPORT

State of Idaho

Project No. F-71-R-3

Job No. III-a

Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Title: Region 3 Mountain Lake Investigations

Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

During the study period YACC and Idaho Department of Fish and Game personnel surveyed a total of 8 lakes in the vicinity of Red Mountain and 9 lakes in the northern portion of the Sawtooth Mountains. All lakes sampled drain into the South Fork of the Payette River.

Seven of the lakes sampled in the Red Mountain area contain fish. Only one of these lakes provides natural reproduction. All seven lakes with fish receive plants of hatchery-reared cutthroat trout or rainbow trout fry every third year.

From the second group of lakes, we sampled 3 in the Trail Creek system, 3 in the Trailer Lake group, 3 in the North Fork of Baron Creek and Regan Lake. Trail Creek Lake #2, Trailer Lake #2 and the North Fork of Baron Creek Lake #3 all contain excellent spawning potential and need no artifical stocking. We found no fish in Trail Creek Lake #3, Trailer Lakes #1 and #3 or the North Fork of Baron Creek Lakes #1 and #2.

Author:

Will Reid
Regional Fishery Manager

OBJECTIVES

To obtain angler use and harvest, species composition, relative abundance, age structure, and life history information from selected high mountain lakes in the South Fork of the Payette River Drainage.

TECHNIQUES USED

Personnel from the Idaho Department of Fish and Game and YACC personnel working for the Idaho Department of Fish and Game surveyed a total of 17 high mountain lakes in the Red Mountain area and in the Sawtooth Primitive Area.

At each lake observers recorded the type of lake, inlet flow, outlet flow, spawning suitability of the inlet and the outlet, water depth, shoal composition, shoal area, shoreline composition, observed aquatic insects, fish species composition and access. We collected fish with rod and reel. Personnel obtained depth measurements with a weighted line. We obtained a minimum of 10 measurements along two perpendicular lines. Personnel at the lake made estimates of the other parameters.

FINDINGS

During the study period we surveyed a total of 17 high mountain lakes. Eight of these lakes lie on Red Mountain and drain into the South Fork of the Payette River by way of Eight Mile Creek and Cat Creek. The other nine lakes surveyed lie in the extreme northern portion of the Sawtooth Primitive Area and drain into the South Fork of the Payette River.

I have separated the lakes surveyed into two groups; group 1 lakes lie on Red Mountain and group 2 in the Sawtooth Primitive Area (Fig. 1). I have listed below the lake surveyed and the results of each.

Group 1--Eight Mile Creek and Cat Creek (surveyed 7/18/78)

Eight Mile Creek Lake #2

Eight Mile Creek Lake #2 lies at an elevation of 2,393 m (7,850 ft) and covers about 2.0 ha (5 acres). This lake has an average water depth of 5 m (16.4 ft). Eight Mile Creek #2 has two inlets. At the time of the survey we estimated the rate of flow at 1.5 cfs and 1.0 cfs for the inlets. The outlet had an estimated rate of flow of 3.0 cfs. The shoal area made up about 30% of the lake bottom. We estimated that sand and silt made up 90% of the shoal area and rock rubble 10%.

The Idaho Department of Fish and Game stocks this lake with cutthroat trout (Salmo clarki) every 3 years with about 1,400 fish. We last stocked this lake **in** 1977. Both inlet streams provide limited spawning potential. The outlet has good spawning gravel but has access to fish blocked by vegetation. At the time

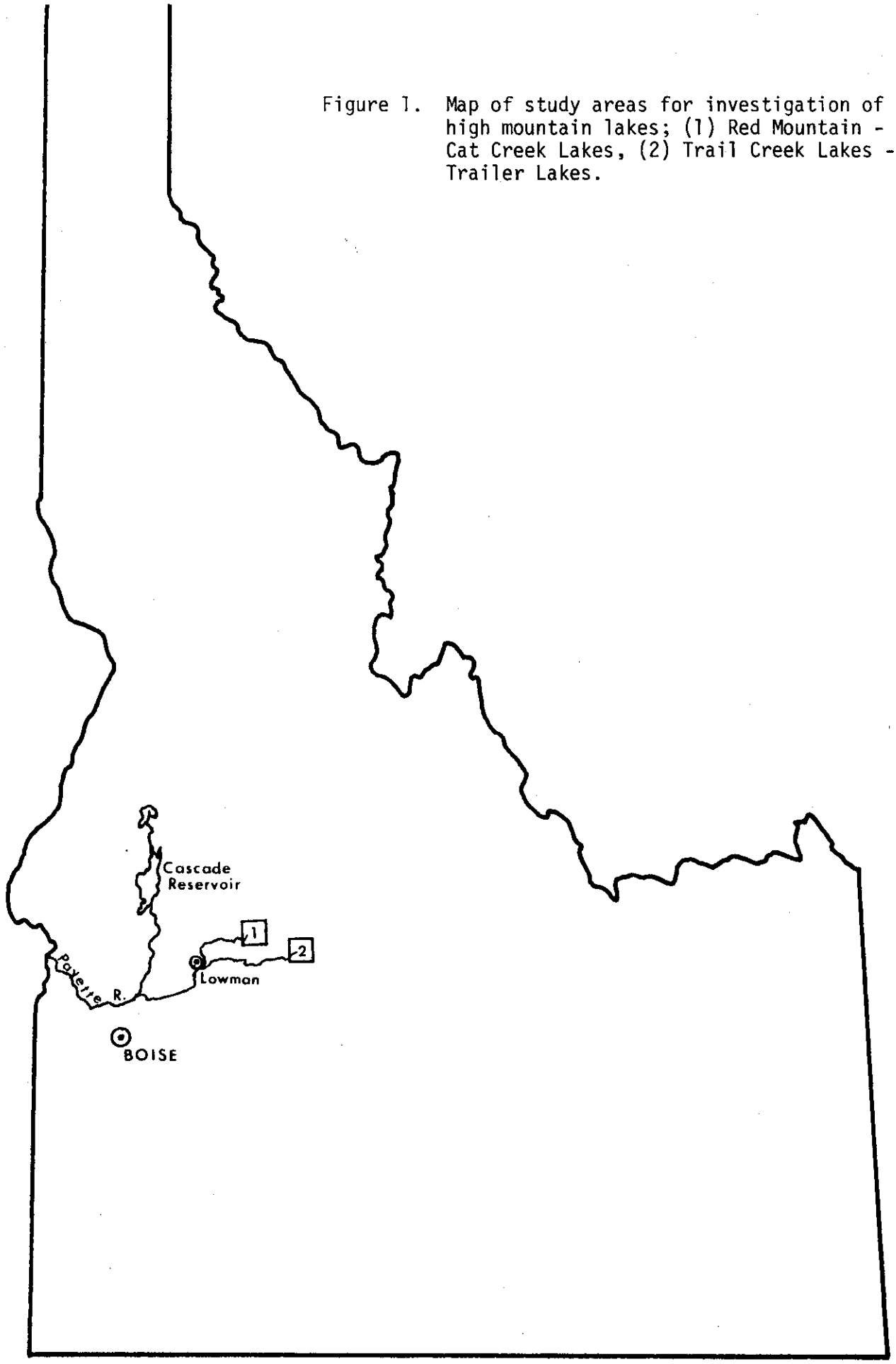

Figure 1. Map of study areas for investigation of high mountain lakes; (1) Red Mountain - Cat Creek Lakes, (2) Trail Creek Lakes - Trailer Lakes.

of this survey the sampled and observed fish ranged in size from 12 to 31 cm (4.7 - 12.2 in). We had poor fishing success and observed very few fish. The diet of those fish sampled consisted primarily of water boatman beetles and mosquito larvae.

Although this lake has no improved trail, we found easy access and use ranges from moderate to heavy. Eight Mile Creek Lake #2 has limited natural reproduction of fish. I recommend we continue stocking fish at present rates and resurvey in 1980. Data collected this year indicates the stocking rate may have to be increased to meet current and projected demands.

Eight Mile Creek Lake #3

Eight Mile Creek Lake #3 lies 1.9 k (1.2 mi) up Eight Mile Creek from Eight Mile Lake #2. This lake sits at an elevation of 2,471 m (8,106 ft) and covers an area of about 2 ha (5 acres). The lake has a maximum depth of 6.0 m (19.7 ft) and an average depth of 4.8 m (15.7 ft). We estimated a flow at the inlet of 1.1 cfs and a flow at the outlet of 1.5 cfs.

The shoal area makes up about 40% of the lake bottom. Rock rubble comprises about 20% of the shoal material, silt and sand 20% and large boulder 60%.

The Idaho Department of Fish and Game stocks about 1,400 cutthroat trout every 3 years in Eight Mile Creek Lake #3. The lake contains no other species of fish. The inlet and outlet stream both have a waterfall migration block which prevents any natural reproduction. We experienced poor fishing success at this lake and observed very few fish. Those fish sampled and observed ranged in size from 20-33 cm (7.8-13.0 in). Stomach samples from those fish sampled indicates a primary diet of water boatman beetles and mosquito larvae.

Eight Mile Creek Lake #3 has no trail but receives moderate to heavy fishing pressure. Samples obtained indicate that the current stocking rate may not pro-vide enough fish to satisfy the current pressure. I recommend that we continue the present stocking rate and resurvey this lake in the year 1980.

Eight Mile Creek Lake #4

Eight Mile Creek Lake #4 lies at an elevation of 2,518 m (8,262 ft) about 0.6 k (0.4 mi) up Eight Mile Creek from Eight Mile Creek Lake #3. A large shallow pond lies between Eight Mile Creek Lake #3 and Eight Mile Creek Lake #4. We measured the depth at Eight Mile Creek Lake #4 and found a maximum depth of 13 m (42.6 ft) and an average depth of 8.75 m (28.7 ft). This lake has no inlet and receives water from snow-melt. The outlet flow of a rate of 0.3 cfs at the time of survey. The shoal area made up about 20% of the bottom. We estimated that large boulders made up 40% of the shoal area, rock rubble 40% and silt 20%.

The Idaho Department of Fish and Game last planted Eight Mile Creek Lake #4 in 1977 with 1,410 cutthroat trout. We found large numbers of cutthroat trout ranging in size from 15-30 cm (5.9-11.8 in). The. primary diet of those fish sampled was water boatman beetles, mayflies and mosquito larvae. This lake has

no natural reproduction.

Eight Mile Creek Lake #4 has no improved trail but has easy access. It appeared that the lake receives just moderate fishing pressure. The present stocking rate appears adequate to. meet current demand.

Cat Creek Lake #1

We did not make a physical survey of this lake but did observe many fish rising. Cat Creek Lake #1 lies at an elevation of 2,340 m (7,678 ft) and occupies 3.7 ha (9.1 acres). It appeared to be very deep.

This lake last received fish in 1977. From the number of fish observed rising, I believe that the present stocking rate will meet current demand.

Cat Creek Lake #2

Cat Creek Lake #2 occupies an area of 1.2 ha (3 acres) at an elevation of 2, 368 m (7,770 ft). We measured a maximum depth of 2 m (6.6 ft). This lake currently has no fish and we recommend leaving it barren due to shallow depths.

Cat Creek Lake #3

Cat Creek Lake #3 lies at an elevation of 2,383 m (7,820 ft). It occupies an area of 1 ha (2.5 acres). The shoal area is made up of silt and sand and comprises about 90% of the lake bottom. We measured the maximum depth of this lake at 6.3 m (20.5 ft) and the average depth at 4.6 m (14.9 ft). The inlet flows into the lake at a rate of 1.3 cfs and discharges at a rate of 1.4 cfs.

Planting records show we last planted this lake in 1977 with 1,400 cutthroat trout. The inlet has good spawning gravel but fish find it inaccessible due to debris and vegetative growth. The outlet has no spawning potential. We sampled only one fish (10 cm) at this lake.

To maintain a good fishery at this lake we should increase the stocking rate to about 1,900 fish every 3 years, or 950 every 2 years.

Cat Creek Lake #4

Cat Creek Lake #4 covers an area of about 1.6 ha (4 acres) at an elevation of 2,408 m (7,900 ft). At the time of this survey the lake had no inlet or out-let above ground. We found the entire lake bottom shoal-like, made up entirely of sand and silt with many submerged aquatic plants. This lake has a maximum depth of 6.0 m (14.1 ft).

We found *very* few fish present in Cat Creek Lake #4. The fish sampled ranged in size from 15-25 cm (6-10 in). Water boatman beetles and mosquito lar-vae made up the primary food organisms in the stomach of those fish sampled.

Due to the size and depth of this lake, I feel good possibility exists that this lake has an extensive winter kill. We should continue the present stocking

rate of 1,400 fish every 3 years. We last planted this lake in 1977 with cut-throat trout and should receive another plant **in** 1980.

Cat Creek Lake #5

Cat Creek Lake #5 lies in a small cirque basin at an elevation of 2,432 m (7,980 ft) and covers an area of 1.4 ha (3.6 acres). The lake inlet has a base flow of 0.9 cfs. Water leaves the lake at a rate of 1.0 cfs. We did not estimate the percent of shoal or shoal composition. The depth of this lake averaged 6.4 m (20.8 ft) with a maximum depth of 9 m (29.5 ft). The Idaho Department of Fish and Game last planted this lake in 1977 with 1,400 cutthroat trout. We found no other species present. We had poor fishing success at Cat Creek Lake #5 and observed very few fish. The size of those fish captured ranged from 13 cm (5.1 in) to 40 cm (15.7 in).

Although we observed few fish at Cat Creek Lake #5, the wide range in size indicates adequate survival and good growth. I recommend continuing the present stocking rate of 1,400 fish every 3 years.

Group 2--Regan Lake, Trail Creek Lakes, Trailer Lake and North Fork of Baron Creek Lakes. (Surveyed 7/24 to 8/2/78)

Trail Creek Lake #2

Trail Creek Lake #2 occupies a cirque basin with a surface area of 3.5 ha (8.6 acres). The shoal area makes up 10% of the lake bottom. Large boulders and rock rubble each make up 50% of the shoal area. The lake has an average depth of 9.7 m (31.7 ft) and a maximum depth of 15 m (42.5 ft). The lake inlet supplies a flow of water measured at 2.5 cfs. The outlet flow measured 2.5 cfs.

We have no recent records of fish plantings in Trail Creek Lake #2. Past records indicate that the Trail Creek System has received plants of both cutthroat trout and rainbow trout. The inlet to Trail Creek Lake #2 has about 15 m (49 ft) of good spawning gravel. I would therefore suspect that this lake contains primarily rainbow trout X cutthroat trout hybrids of one degree or another.

This lake has good spawning potential. We should, however, supplement the population every 3 years.

Trail Creek Lake #3

Trail Creek Lake #3 occupies a surface area of 2.5 ha (6.1 acres). It has a small island of 0.2 ha (0.5 acres) near the southern shore. The lake has an average depth of 4.9 m (20.7 ft). The entire bottom has a silt cover about 10 cm (3.9 in) deep. We found no evidence of any fish at Trail Creek Lake #3.

Trailer Lake #1 and #3

Trailer Lakes #1 and #3 both occupy a small area, .6 ha (1.5 acres) and .8 ha (2 acres), respectively. We found no fish present in either lake and concluded

they did not have sufficient depth to over winter fish.

Trailer Lake #2

Trailer Lake #2 covers about 3.6 ha (9 acres). At the time of this survey, ice covered 90% of the lake. This lake has received plants of rainbow trout in the past but nothing in recent years. Due to the ice cover we made no attempt to capture fish.

Regan Lake

Regan Lake lies in a major cirque basin with a surface area of 1.6 ha (4 acres). The shoal area makes up 40% of the lake bottom. Rubble and gravel make up 100% of the shoal area. The inlet and outlet both have a flow of 2.0 cfs.

We did not sample or see any fish at Regan Lake. Planting records show that this lake received California Golden Trout in 1959 with no additional plants. Neither the inlet nor the outlet has spawning potential. This lake could support a fishery but it will require stocking to maintain it.

North Fork Baron Creek Lake #1

The North Fork of Baron Creek Lake #1 occupies a small basin impounded by rock slides. It has a surface area of 2.0 ha (5 acres), a mean depth of 2.9 m (9.4 ft) and a maximum depth of 4 m (13.1 ft). This lake has no surface inlet or outlet.

We did not sample or observe any fish in N.F. Baron Creek Lake #1. This lake probably does not have sufficient depth and would winter kill if planted with fish.

North Fork Baron Creek Lake #2

The North Fork of Baron Creek Lake #2 covers about 6.5 ha (16 acres). It has a mean depth of 30.9 m (101.3 ft) and a maximum depth of 43 m (141 ft). The shoal area comprised only 5% of the lake bottom. Rock rubble made up the entire contents of the shoal. Water inflow to the lake came from snowmelt and submerged springs. The outlet had a flow of 1.5 cfs.

We did not observe or sample any fish at this lake. I recommend stocking this lake in 1980 and resurveying in 1982. The outlet has about 15m(49 ft) of good spawning gravel but has access to it blocked. Clearing of roots and vegetation could provide the opportunity for some natural reproduction.

North Fork Baron Creek Lake #3

The North Fork of Baron Creek Lake #3 has a surface area of 2.8 ha (7 acres), impounded by a moraine. This lake has an average depth of 6.1 m (20 ft) with a maximum depth of 12.2 m (40 ft). The shoal area represents 50% of the lake bottom

with 67% of the shoal made up of sand and silt and 30% rubble and gravel. The inlet has a flow of 1.5 cfs and provides 2-3 m (6.5-9.8 ft) of good spawning gravel.

We did not capture any fish but did observe a few rainbow trout while snorkeling. Those fish observed ranged in size from 20 to 30 cm (7.9-11.8 in). I could find no recent planting records for this lake. Past records indicate the lake last received fish in 1959. I recommend we stock this lake in 1980 and resurvey in 1982.

State of Idaho

Project No. F-71-R-3

Job No. III-b

Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Title: Region 3 Lowland Lakes and Reservoir Investigations

Period Covered: 1 January 1978 to 31 December 1978

ABSTRACT

At Crane Falls Lake we monitored post-treatment recovery and growth of newly stocked brown trout and Kamloops trout. At Paddock Valley Reservoir and at Deadwood Reservoir we continued to monitor the growth of individual fish and the relative population growth.

Author:

Will Reid
Regional Fishery Manager

OBJECTIVES

To obtain angler use and harvest, species composition, relative abundance, age structure and life history data for fish populations in selected lowland lakes and reservoirs in Region 3.

TECHNIQUES USED

During the 1978 field season we continued to monitor growth rates of fish at Crane Falls Lake, Paddock Valley Reservoir and Deadwood Reservoir. We collected fish from Crane Falls Lake with a rod and reel and measured all fish captured to the nearest millimeter. At Paddock Valley Reservoir we set 30 m (100 ft) experimental monofilament gill nets. We enumerated and measured all captured fish to the nearest millimeter.

With help from the Bureau of Reclamation YACC camp, we constructed a migration barrier at Deadwood Reservoir to block kokanee migration into the Deadwood River. We constructed the barrier in the reservoir at maximum drawdown. In the spring when the reservoir has reached maximum elevation, rainbow trout and cutthroat trout will pass the barrier. In the fall the barrier will not allow the kokanee salmon passage. Below the barrier we obtained a sample of kokanee salmon and measured them to the nearest millimeter.

We were not able to accomplish all of our objectives for this job because one of our permanent personnel terminated and was not immediately replaced.

FINDINGS

Crane Falls Lake

After conducting an extensive public opinion survey at Crane Falls Lake and two public hearings, the Idaho Department of Fish and Game decided we could best serve public interest by regulating Crane Falls Lake for "trophy trout" with a limit of 2 trout over 16 inches total length.

To provide maximum opportunity for growth we decided to eliminate all other species from the lake. In September 1977 we treated Crane Falls Lake with rotenone and achieved a total fish kill. On 3 March 1978 we restocked Crane Falls Lake with 17,000 fingerling size Kamloops strain rainbow trout and 14,800 fingerling size brown trout. At the time of stocking we sampled 144 Kamloops trout and 191 brown trout. The Kamloops trout ranged in size from 120 to 250 mm (4.7-9.8 in) and averaged 191.8 mm (7.6 in) in total length. The brown trout sampled ranged in size from 110 to 225 mm (4.3-8.9 in) and averaged 184.3 mm (7.3 in) in total length. On 27 May 1978, I collected 17 Kamloops trout and 15 brown trout with a rod and reel. The Kamloops trout averaged 230 mm (9.1 in) in total length and the brown trout 225 mm (8.9 in).

On 6 October 1978 we planted an additional 31,900 fingerling Kamloops trout 10

in Crane Falls Lake and 11,300 fingerling brown trout. The Kamloops trout planted ranged in size from 42 to 97 mm (1.6-3.8 in) and averaged 67.4 mm (2. 7 in). The brown trout sampled averaged 88.9 mm (3.5 in) in total length. All fish planted on 6 October 1978 received an adipose fin clip to discern them from earlier plants.

I sampled Crane Falls Lake again on 22 November 1978. We captured only 6 Kamloops trout and 1 brown trout. The Kamloops trout sampled averaged 281 mm (11.1 in) and the one. brown trout 275 mm (10.8 in). We did not capture any fish with an adipose fin clip. Based on the limited data collected, I estimated that the Kamloops trout grew an average of 89.2 mm (3.5 in) in 9 months. The brown trout grew an average of 90.7 mm (3.6 in) in 9 months based on only one recapture.

In addition to the "trout" monitoring program, we also sampled plankton to measure the rate of recovery of Crane Falls Lake after treatment. Immediately after treatment of the lake we found zero concentration of aquatic organisms. We obtained plankton samples again on 13 February 1978 and again on 24 February 1978. From the 13 February 1978 study we found concentrations of large planktonic organisms. We also found small organisms such as rotifers too numerous to count. From the 24 February 1978 sample we estimated 10 organisms per liter of cyclops and daphnia.

From September 1977 to March 1978, Crane Falls Lake displayed a rapid rate of recovery. It appears that we had good survival of Kamloops trout and brown trout from the first planting on 3 March 1978. Although we only captured seven fish total (one brown trout) on 22 November 1978, I did observe a large number of both Kamloops trout and brown trout being caught and released by anglers. At this time I have had no information on the survival of those fish planted 6 October 1978.

During 1979 we will continue to monitor growth rates and survival of both brown trout and Kamloops trout. At this time we have no fish over 406 mm (16 in) and I do not anticipate any legal harvest in 1979.

During the year I received several unconfirmed reports that local anglers have restocked Crane Falls Lake with bass and crappies. We will investigate those reports in 1979.

Paddock Valley Reservoir

At Paddock Valley Reservoir I set two 30 m (100 ft) experimentally rigged monofilament gill nets for a total set time of 24 hours. We captured a total of 224 black crappies and no other species in the two sets. Those fish captured ranged in size from 50 to 105 mm (2-4.1 in) and averaged 71.8 mm (2.8 in) in total length. The size of those fish sampled shows a reduction in size from 1977. However, scale samples taken in 1977 indicate that 3 and 4 year old fish make up the bulk of the population. Scales obtained in 1978 show very few four year old fish with a strong three year old year class.

I am quite concerned that we failed to capture any largemouth bass in our 11

gill nets and anglers reported very few largemouth bass in the creel. At this time I have no clues to explain the low numbers of largemouth bass. The 1977 drought did reduce available habitat but the reservoir did not go dry and I felt ample habitat remained to support largemouth bass.

Deadwood Reservior

Catch records in 1978 indicated the average size of kokanee had declined drastically from 1977 and that the condition of rainbow trout and cutthroat trout had declined. In August, during the kokanee spawning run, I sampled 25 mature kokanee salmon. I found the average size of the mature kokanee had declined from 386 mm (15.2 in) in 1977 to 292.1 mm (11.5 in) in 1978.

We have constructed a kokanee migration barrier in Deadwood Reservoir in an attempt to limit kokanee access to the prime spawning areas of the upper Deadwood River. The barrier will remain below water in the spring when cutthroat trout and rainbow trout run into the Deadwood River to spawn. In the fall after the irrigation season, the reservoir water level will have dropped enough to expose the barrier and limit kokanee migration. We will continue to monitor this fishery in 1979 to evaluate the success of the migration barrier.

Other

We also collected 800 smallmouth bass from Brownlee Reservoir for transplant into Lucky Peak Reservoir, 900 largemouth bass from Tyson's Pond in Owyhee County for transplant into Indian Creek Reservoir and Julia Davis Pond, and 2,000 largemouth bass, bluegill sunfish and pumkinseed sunfish from the Weiser Bass Ponds for transplant into Julia Davis Pond. We have now completed the smallmouth bass introduction to Lucky Peak Reservoir. Fishing reports indicate the small-mouth bass have established themselves with reports of many smallmouth bass fry along the Lucky Peak shoreline. We will continue collecting smallmouth bass from Brownlee Reservoir during 1979 for transplant into Lake Lowell. We will also collect largmouth bass for introduction into Indian Creek Reservoir and to supplement bass populations in Paddock Valley Reservoir.

In addition to the above listed lowland lakes and reservoirs, we also obtained creel data from Idaho Department of Fish and Game Conservation Officers and from the Mores Creek Check Station (Tables 1 & 2).

Table 1. Catch statistics for selected Region 3 lakes and reservoirs from spot checks during 1978.

Water	Anglers	Total hours fished	Fish caught	Fish/hour
Arrowrock Reservoir	413	1,581	724	.46
Lucky Peak Reservoir	305	916	353	.39
Warm Lake	33	33	19	.58
Tripod Lake	8	16	3	.19
Bulltrout Lake	6	21	8	.38
Payette Lake	21	66	58	.89
Upper Payette Lake	8	31	13	.42
Brundage Reservoir	4	4	4	1.0
Deadwood Reservoir	12	66	17	.26
Lost Valley Reservoir	126	301	116	.39
C. J. Strike Reservoir	67	173	72	.42
Cove Arm Reservoir	14	28	15	.54

Table 2. Species composition (percent of catch) of Region 3 lakes and reservoirs as reflected by spot check creel information in 1978.

Water	Rainbow	Dolly Varden	Whitefish	Kokanee	Brook trout	Cutthroat	Macinaw	Yellow Perch	Bullhead	Black crappie	Bluegill	Pumpkinseed	Largemouth Bass	Channel catfish
Arrowrock Reservoir	93.8	5.1	.6	.4	.1									
Lucky Peak Reservoir	95.5	.8	1.1	2.6										
Warm Lake	21.0			79.0										
Tripod Lake	100.0													
Bulltrout Lake	37.5				62.5									
Payette Lake	19.0			77.6			3.4							
Upper Payette Lake	53.9				15.4	30.7								
Brundage Reservoir	100.0													
Deadwood Reservoir	47.1					52.9								
Sagehen Reservoir	100.0													
Lost Valley Reservoir	87.1				12.9									
C. J. Strike								8.3	18.1	54.2	11.1	5.6	2.8	
Cove Arm Reservoir	53.3								20.0	6.7		13.3	6.7	
Halverson Reservoir								7.7			71.8		20.5	